



SEQUENCE LISTING

<110> ALDAZ, MARCELO C.
BEDNAREK, ANDRZEJ

<120> WWOX: A PUTATIVE TUMOR SUPPRESSOR GENE MUTATED IN
MULTIPLE CANCERS

<130> UTSC:671US

<140> 09/978,318

<141> 2001-10-15

<150> 60/240,277

<151> 2000-10-13

<160> 68

<170> PatentIn Ver. 2.1

<210> 1

<211> 2264

<212> DNA

<213> Human

<400> 1

```
gcagtgcgca ggcgtgagcg gtcggggcccc gacgcgcgcg ggtctcgttt ggagcgggag 60
tgagttcctg agcgagtgga cccggcagcg ggcgataggg gggccagggt cctccacagt 120
cagccatggc agcgctgcgc tacgcggggc tggacgacac ggacagtgag gacgagctgc 180
ctccgggctg ggaggagaga accaccaagg acggctgggt ttactacgcc aatcacaccg 240
aggagaagac tcagtgggaa catccaaaaa ctggaaaaag aaaacgagtg gcaggagatt 300
tgccatacgg atgggaacaa gaaactgatg agaacggaca agtggttttt gttgaccata 360
taaataaaaag aaccacctac ttggacccaa gactggcggt tactgtggat gataatccga 420
ccaagccaac caccggcaa agatacgacg gcagcaccac tgccatggaa attctccagg 480
gccgggattt cactggcaaa gtggttggtg tcaactggagc taattcagga atagggttcg 540
aaaccgcaa gtcttttgcc ctccatggtg cacatgtgat cttggcctgc aggaacatgg 600
caaggcgag tgaagcagtg tcacgcattt tagaagaatg gcataaagcc aaggtagaag 660
caatgacctt ggacctcgct ctgctccgta gcgtgcagca ttttgctgaa gcattcaagg 720
ccaagaatgt gcctcttcat gtgcttggtg gcaacgcagc aacttttgct ctacctgga 780
gtctcaccaa agatggcctg gagaccacct ttcaagtga tcatctgggg cacttctacc 840
ttgtccagct cctccaggat gttttgtgcc gctcagctcc tgcccgtgtc atttggttct 900
cctcagagtc ccatcgattt acagatatta acgactcctt gggaaaactg gacttcagtc 960
gcctctctcc aacaaaaaac gactattggg cgatgctggc ttataacagg tccaagctct 1020
gcaacatcct cttctccaac gagctgcacc gtcgcctctc cccacgcggg gtcacgtcga 1080
acgcagtgca tcctggaaat atgatgtact ccaacattca tcgcagctgg tgggtgtaca 1140
cactgctgtt taccttggcg aggcctttca ccaagtccat gcaacaggga gctgccacca 1200
ccgtgtactg tgctgctgtc ccagaactgg agggctctgg agggatgtac ttcaacaact 1260
gctgccgctg catgccctca ccagaagctc agagcgaaaga gacggcccgg accctgtggg 1320
cgctcagcga gaggctgatc caagaacggc ttggcagcca gtccgggctaa gtggagctca 1380
gagcggatgg gcacacacac ccgccctgtg tgtgtcccct cacgcaagtg ccagggctgg 1440
gccccttcca aatgtccctc caacacagat ccgcaagagt aaaggaaata agagcagtca 1500
caacagagtg aaaaatctta agtaccaatg ggaagcaggg aattcctggg gtaaagtatc 1560
acttttctgg ggctgggcta ggcataagtc tctttgcttt ctggtggtgg cctgtttgaa 1620
agtaaaaacc tgcttggtgt gtaggttccg tatctccctg gagaagcacc agcaattctc 1680
tttcttttac tgttatagaa tagcctgagg tccctcgtc ccatccagct accaccacgg 1740
ccaccactgc agccgggggc tggccttctc ctacttaggg aagaaaaagc aagtgttcac 1800
```

tgctccttgc tgcattgatac caggagataa ttgtttcatt catcctgacc aagactgagc 1860
 cagcttagca actgctgggg agacaaatct cagaaccttg tcccagccag tgaggatgac 1920
 agtgacaccc agaggggagta gaatacgcag aactaccagg tggcaaagta cttgtcatag 1980
 actccttttg taatgctatg caaaaaattc tttagagatt ataacaaatt tttcaaatca 2040
 ttccttagat accttgaaaag gcaggaaggg aagcgtatat acttaagaat acacaggata 2100
 ttttgggggg cagagaataa aacgttagtt aatccctttg tctgtcaatc acagtctcag 2160
 ttctcttgct ttcacattgt acttaaacct cctgctgtgc ctcgcatcct atgcttaata 2220
 aaagaacatg cttgaatatc aaaaaaaaaa aaaaaaaaaa aaaa 2264

<210> 2

<211> 414

<212> PRT

<213> Human

<400> 2

Met	Ala	Ala	Leu	Arg	Tyr	Ala	Gly	Leu	Asp	Asp	Thr	Asp	Ser	Glu	Asp	1	5	10	15
Glu	Leu	Pro	Pro	Gly	Trp	Glu	Glu	Arg	Thr	Thr	Lys	Asp	Gly	Trp	Val	20	25	30	
Tyr	Tyr	Ala	Asn	His	Thr	Glu	Glu	Lys	Thr	Gln	Trp	Glu	His	Pro	Lys	35	40	45	
Thr	Gly	Lys	Arg	Lys	Arg	Val	Ala	Gly	Asp	Leu	Pro	Tyr	Gly	Trp	Glu	50	55	60	
Gln	Glu	Thr	Asp	Glu	Asn	Gly	Gln	Val	Phe	Phe	Val	Asp	His	Ile	Asn	65	70	75	80
Lys	Arg	Thr	Thr	Tyr	Leu	Asp	Pro	Arg	Leu	Ala	Phe	Thr	Val	Asp	Asp	85	90	95	
Asn	Pro	Thr	Lys	Pro	Thr	Thr	Arg	Gln	Arg	Tyr	Asp	Gly	Ser	Thr	Thr	100	105	110	
Ala	Met	Glu	Ile	Leu	Gln	Gly	Arg	Asp	Phe	Thr	Gly	Lys	Val	Val	Val	115	120	125	
Val	Thr	Gly	Ala	Asn	Ser	Gly	Ile	Gly	Phe	Glu	Thr	Ala	Lys	Ser	Phe	130	135	140	
Ala	Leu	His	Gly	Ala	His	Val	Ile	Leu	Ala	Cys	Arg	Asn	Met	Ala	Arg	145	150	155	160
Ala	Ser	Glu	Ala	Val	Ser	Arg	Ile	Leu	Glu	Glu	Trp	His	Lys	Ala	Lys	165	170	175	
Val	Glu	Ala	Met	Thr	Leu	Asp	Leu	Ala	Leu	Leu	Arg	Ser	Val	Gln	His	180	185	190	
Phe	Ala	Glu	Ala	Phe	Lys	Ala	Lys	Asn	Val	Pro	Leu	His	Val	Leu	Val	195	200	205	
Cys	Asn	Ala	Ala	Thr	Phe	Ala	Leu	Pro	Trp	Ser	Leu	Thr	Lys	Asp	Gly	210	215	220	

Leu Glu Thr Thr Phe Gln Val Asn His Leu Gly His Phe Tyr Leu Val
 225 230 235 240
 Gln Leu Leu Gln Asp Val Leu Cys Arg Ser Ala Pro Ala Arg Val Ile
 245 250 255
 Val Val Ser Ser Glu Ser His Arg Phe Thr Asp Ile Asn Asp Ser Leu
 260 265 270
 Gly Lys Leu Asp Phe Ser Arg Leu Ser Pro Thr Lys Asn Asp Tyr Trp
 275 280 285
 Ala Met Leu Ala Tyr Asn Arg Ser Lys Leu Cys Asn Ile Leu Phe Ser
 290 295 300
 Asn Glu Leu His Arg Arg Leu Ser Pro Arg Gly Val Thr Ser Asn Ala
 305 310 315 320
 Val His Pro Gly Asn Met Met Tyr Ser Asn Ile His Arg Ser Trp Trp
 325 330 335
 Val Tyr Thr Leu Leu Phe Thr Leu Ala Arg Pro Phe Thr Lys Ser Met
 340 345 350
 Gln Gln Gly Ala Ala Thr Thr Val Tyr Cys Ala Ala Val Pro Glu Leu
 355 360 365
 Glu Gly Leu Gly Gly Met Tyr Phe Asn Asn Cys Cys Arg Cys Met Pro
 370 375 380
 Ser Pro Glu Ala Gln Ser Glu Glu Thr Ala Arg Thr Leu Trp Ala Leu
 385 390 395 400
 Ser Glu Arg Leu Ile Gln Glu Arg Leu Gly Ser Gln Ser Gly
 405 410

<210> 3
 <211> 26
 <212> DNA
 <213> Homo sapiens

<400> 3
 acggtggtgg cagctccctg ttgttg

26

<210> 4
 <211> 29
 <212> DNA
 <213> Homo sapiens

<400> 4
 acggtggtgg cagctccctg ttgcgatgg

29

<210> 5
 <211> 33

<212> DNA
 <213> Homo sapiens

 <400> 5
 acggtgggtgg cagctccctg ttgacattct tgg 33

 <210> 6
 <211> 32
 <212> DNA
 <213> Homo sapiens

 <400> 6
 acggtgggtgg cagctccctg ttgccattct tc 32

 <210> 7
 <211> 30
 <212> DNA
 <213> Homo sapiens

 <400> 7
 acggtgggtgg cagctccctg ttgctattcc 30

 <210> 8
 <211> 33
 <212> DNA
 <213> Homo sapiens

 <400> 8
 tgggtggcagc tccctgttgt caacaaaaaa cac 33

 <210> 9
 <211> 27
 <212> DNA
 <213> Homo sapiens

 <400> 9
 acggtgggtgg cagctccctg ttgctcc 27

 <210> 10
 <211> 19
 <212> DNA
 <213> Homo sapiens

 <400> 10
 tcgcagctgg tgggtgtac 19

 <210> 11
 <211> 21
 <212> DNA
 <213> Homo sapiens

<400> 11
agctccctgt tgcattggact t 21

<210> 12
<211> 22
<212> DNA
<213> Homo sapiens

<400> 12
tgagtgtgt ctccatgttt ga 22

<210> 13
<211> 22
<212> DNA
<213> Homo sapiens

<400> 13
tctgtcccc acctctaagt tg 22

<210> 14
<211> 21
<212> DNA
<213> Homo sapiens

<400> 14
aggcagtgcg caggcgtgag c 21

<210> 15
<211> 22
<212> DNA
<213> Homo sapiens

<400> 15
cagccctggc acttgctga gg 22

<210> 16
<211> 22
<212> DNA
<213> Homo sapiens

<400> 16
tgcgtgaggg gacacacaca gg 22

<210> 17
<211> 23
<212> DNA
<213> Homo sapiens

<400> 17
gagttcctga gcgagtggac ccg 23

<210> 18
 <211> 30
 <212> DNA
 <213> Homo sapiens

 <400> 18
 tagtttttat tattattagt ttttattatt 30

 <210> 19
 <211> 22
 <212> DNA
 <213> Homo sapiens

 <400> 19
 aatactacat cctaaacaac aa 22

 <210> 20
 <211> 30
 <212> DNA
 <213> Homo sapiens

 <400> 20
 agttttttatt attatgagtt tttattaaat 30

 <210> 21
 <211> 20
 <212> DNA
 <213> Homo sapiens

 <220>
 <221> modified_base
 <222> (3)..(5)
 <223> R = A OR G

 <400> 21
 ccrcrcaata ctacatccta 20

 <210> 22
 <211> 20
 <212> DNA
 <213> Homo sapiens

 <220>
 <221> modified_base
 <222> (11)
 <223> Y = C OR T/U

 <400> 22
 gggatgaggt ygttttgttt 20

 <210> 23

<211> 24
<212> DNA
<213> Homo sapiens

<400> 23
tcataaatct ctattaaaca acaa

24

<210> 24
<211> 21
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (2)
<223> Y = C OR T/U

<400> 24
gygtagtggt gtattttgaa t

21

<210> 25
<211> 28
<212> DNA
<213> Homo sapiens

<400> 25
tcacaatctc tattatatat tttaacta

28

<210> 26
<211> 19
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (9)..(11)
<223> R = A OR G

<400> 26
tcttccccrc rcaaataac

19

<210> 27
<211> 30
<212> DNA
<213> Homo sapiens

<400> 27
ttattattat gagtttttat taaataatag

30

<210> 28
<211> 1625
<212> DNA

<213> Homo sapiens

<400> 28

```
ggcacgaggc agtgcgcagg cgtgagcggc cgggccccga cgcgcgcggg tctcgtttgg 60
agcgggagtg agttcctgag cgagtggacc cggcagcggg cgataggggg gccaggtgcc 120
tccacagtca gccatggcag cgctgcgcta cgcggggctg gacgacacgg acagtgagga 180
cgagctgcct cggggctggg aggagagaac caccaaggac ggctgggttt actacgcca 240
tcacaccgag gagaagactc agtgggaaca tccaaaaact ggaaaaagaa aacgagtggc 300
aggagatttg ccatacggat gggaacaaga aactgatgag aacggacaag tgttttttgt 360
tgaccatata aataaaagaa ccacctactt ggaccaaga ctggcgttta ctgtggatga 420
taatccgacc aagccaacca cccggcaaa atacgacggc agcaccactg ccatggaaat 480
tctccagggc cgggatttca ctggcaaaagt ggttgtggc actggagcta attcaggaat 540
agcaacaggg agctgccacc accgtgtact gtgctgctgt cccagaactg gagggctctg 600
gagggatgta cttcaacaac tgctgccgct gcctgccctc accagaagct cagagcgaag 660
agacggcccc gaccctgtgg gcgctcagcg agaggctgat ccaagaacgg cttggcagcc 720
agtccggcta agtggagctc agagcggatg ggcacacaca cccgccctgt gtgtgtcccc 780
tcacgcaagt gccagggctg ggccccctcc aaatgtccct ccaacacaga tccgcaagag 840
taaaggaaat aagagcagtc acaacagagt gaaaaatctt aagtaccaat gggaagcagg 900
gaattcctgg ggtaaaagtat cacttttctg gggctgggct aggcataagg ctctttgctt 960
tctggtggtg gcctgtttga aagtaaaaaac ctgcttggtg tgtaggttcc gtatctccct 1020
ggagaagcac cagcaattct ctttctttta ctgttataga atagcctgag gtcccctcgt 1080
cccatccagc taccaccacg gccaccactg cagccggggg ctggccttct cctacttagg 1140
gaagaaaaag caagtgttca ctgctccttg ctgcattgat ccaggagata attgtttcat 1200
tcaccttgac caagactgag ccagcttagc aactgctggg gagacaaatc tcagaacctt 1260
gtcccagcca gtgaggatga cagtacacc cagagggagt agaatacgca gaactaccag 1320
gtggcaaat acttgtcata gactcctttg ctaatgctat gcaaaaaatt ctttagagat 1380
tataacaaat ttttcaaata attccttaga taccttgaaa ggcaggaagg gaagcgtata 1440
tacttaagaa tacacaggat attttggggg gcagagaata aaacgttagt taatcccttt 1500
gtctgtcaat cacagtctca gttctcttgc tttcacattg tacttaaaacc tcctgctgtg 1560
cctcgcatcc tatgcttaat aaaagaacat gcttgaatat caaaaaaaaa aaaaaaaaaa 1620
aaaaa
```

<210> 29

<211> 23

<212> DNA

<213> Homo sapiens

<400> 29

tagtgttgta ttttgaatag tag 23

<210> 30

<211> 1625

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (134)..(1069)

<400> 30

```
ggcacgaggc agtgcgcagg cgtgagcggc cgggccccga cgcgcgcggg tctcgtttgg 60
agcgggagtg agttcctgag cgagtggacc cggcagcggg cgataggggg gccaggtgcc 120
tccacagtca gcc atg gca gcg ctg cgc tac gcg ggg ctg gac gac acg 169
```


	Met	Ala	Ala	Leu	Arg	Tyr	Ala	Gly	Leu	Asp	Asp	Thr	
	1				5					10			
gac agt gag gac gag ctg cct ccg ggc tgg gag gag aga acc acc aag	217												
Asp Ser Glu Asp Glu Leu Pro Pro Gly Trp Glu Glu Arg Thr Thr Lys													
15 20 25													
gac ggc tgg gtt tac tac gcc aat cac acc gag gag aag act cag tgg	265												
Asp Gly Trp Val Tyr Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp													
30 35 40													
gaa cat cca aaa act gga aaa aga aaa cga gtg gca gga gat ttg cca	313												
Glu His Pro Lys Thr Gly Lys Arg Lys Arg Val Ala Gly Asp Leu Pro													
45 50 55 60													
tac gga tgg gaa caa gaa act gat gag aac gga caa gtg ttt ttt gtt	361												
Tyr Gly Trp Glu Gln Glu Thr Asp Glu Asn Gly Gln Val Phe Phe Val													
65 70 75													
gac cat ata aat aaa aga acc acc tac ttg gac cca aga ctg gcg ttt	409												
Asp His Ile Asn Lys Arg Thr Thr Tyr Leu Asp Pro Arg Leu Ala Phe													
80 85 90													
act gtg gat gat aat ccg acc aag cca acc acc cgg caa aga tac gac	457												
Thr Val Asp Asp Asn Pro Thr Lys Pro Thr Thr Arg Gln Arg Tyr Asp													
95 100 105													
ggc agc acc act gcc atg gaa att ctc cag ggc cgg gat ttc act ggc	505												
Gly Ser Thr Thr Ala Met Glu Ile Leu Gln Gly Arg Asp Phe Thr Gly													
110 115 120													
aaa gtg gtt gtg gtc act gga gct aat tca gga ata gca aca ggg agc	553												
Lys Val Val Val Thr Gly Ala Asn Ser Gly Ile Ala Thr Gly Ser													
125 130 135 140													
tgc cac cac cgt gta ctg tgc tgc tgt ccc aga act gga ggg tct ggg	601												
Cys His His Arg Val Leu Cys Cys Cys Pro Arg Thr Gly Gly Ser Gly													
145 150 155													
agg gat gta ctt caa caa ctg ctg ccg ctg cat gcc ctc acc aga agc	649												
Arg Asp Val Leu Gln Gln Leu Leu Pro Leu His Ala Leu Thr Arg Ser													
160 165 170													
tca gag cga aga gac ggc ccg gac cct gtg ggc gct cag cga gag gct	697												
Ser Glu Arg Arg Asp Gly Pro Asp Pro Val Gly Ala Gln Arg Glu Ala													
175 180 185													
gat cca aga acg gct tgg cag cca gtc cgg cta agt gga gct cag agc	745												
Asp Pro Arg Thr Ala Trp Gln Pro Val Arg Leu Ser Gly Ala Gln Ser													
190 195 200													
gga tgg gca cac aca ccc gcc ctg tgt gtg tcc cct cac gca agt gcc	793												
Gly Trp Ala His Thr Pro Ala Leu Cys Val Ser Pro His Ala Ser Ala													
205 210 215 220													
agg gct ggg ccc ctt cca aat gtc cct cca aca cag atc cgc aag agt	841												
Arg Ala Gly Pro Leu Pro Asn Val Pro Pro Thr Gln Ile Arg Lys Ser													

225	230	235	
aaa gga aat aag agc agt cac aac aga gtg aaa aat ctt aag tac caa			889
Lys Gly Asn Lys Ser Ser His Asn Arg Val Lys Asn Leu Lys Tyr Gln			
240	245	250	
tg gaa gca ggg aat tcc tgg ggt aaa gta tca ctt ttc tgg ggc tgg			937
Trp Glu Ala Gly Asn Ser Trp Gly Lys Val Ser Leu Phe Trp Gly Trp			
255	260	265	
gct agg cat agg tct ctt tgc ttt ctg gtg gtg gcc tgt ttg aaa gta			985
Ala Arg His Arg Ser Leu Cys Phe Leu Val Val Ala Cys Leu Lys Val			
270	275	280	
aaa acc tgc ttg gtg tgt agg ttc cgt atc tcc ctg gag aag cac cag			1033
Lys Thr Cys Leu Val Cys Arg Phe Arg Ile Ser Leu Glu Lys His Gln			
285	290	295	300
caa ttc tct ttc ttt tac tgt tat aga ata gcc tga ggtccccctcg			1079
Gln Phe Ser Phe Phe Tyr Cys Tyr Arg Ile Ala			
305	310		
tcccatccag ctaccaccac ggccaccact gcagccgggg gctggccttc tcctacttag			1139
ggaagaaaaa gcaagtgttc actgctcctt gctgcattga tccaggagat aattgtttca			1199
ttcatcctga ccaagactga gccagcttag caactgctgg ggagacaaat ctcagaacct			1259
tgtcccagcc agtgaggatg acagtgcacac ccagaggagg tagaatacgc agaactacca			1319
ggtggcaaag tacttgtcat agactccttt gctaattgcta tgcaaaaaat tcttttagaga			1379
ttataacaaa tttttcaaat cattccttag ataccttgaa aggcaggaag ggaagcgtat			1439
atacttaaga atacacagga tattttgggg ggcagagaat aaaacgtag ttaatccctt			1499
tgctgtcaa tcacagtctc agttctcttg ctttcacatt gtacttaaac ctctgctgt			1559
gcctcgcata ctatgcttaa taaaagaaca tgcttgaata tcaaaaaaaaa aaaaaaaaaa			1619
aaaaaa			1625

<210> 31

<211> 311

<212> PRT

<213> Homo sapiens

<400> 31

Met	Ala	Ala	Leu	Arg	Tyr	Ala	Gly	Leu	Asp	Asp	Thr	Asp	Ser	Glu	Asp
1				5					10					15	
Glu	Leu	Pro	Pro	Gly	Trp	Glu	Glu	Arg	Thr	Thr	Lys	Asp	Gly	Trp	Val
			20					25					30		
Tyr	Tyr	Ala	Asn	His	Thr	Glu	Glu	Lys	Thr	Gln	Trp	Glu	His	Pro	Lys
		35					40					45			
Thr	Gly	Lys	Arg	Lys	Arg	Val	Ala	Gly	Asp	Leu	Pro	Tyr	Gly	Trp	Glu
50						55					60				

Gln	Glu	Thr	Asp	Glu	Asn	Gly	Gln	Val	Phe	Phe	Val	Asp	His	Ile	Asn	
65					70				75						80	
Lys	Arg	Thr	Thr	Tyr	Leu	Asp	Pro	Arg	Leu	Ala	Phe	Thr	Val	Asp	Asp	
				85					90					95		
Asn	Pro	Thr	Lys	Pro	Thr	Thr	Arg	Gln	Arg	Tyr	Asp	Gly	Ser	Thr	Thr	
			100					105					110			
Ala	Met	Glu	Ile	Leu	Gln	Gly	Arg	Asp	Phe	Thr	Gly	Lys	Val	Val	Val	
		115					120					125				
Val	Thr	Gly	Ala	Asn	Ser	Gly	Ile	Ala	Thr	Gly	Ser	Cys	His	His	Arg	
	130					135					140					
Val	Leu	Cys	Cys	Cys	Pro	Arg	Thr	Gly	Gly	Ser	Gly	Arg	Asp	Val	Leu	
145					150					155					160	
Gln	Gln	Leu	Leu	Pro	Leu	His	Ala	Leu	Thr	Arg	Ser	Ser	Glu	Arg	Arg	
			165						170					175		
Asp	Gly	Pro	Asp	Pro	Val	Gly	Ala	Gln	Arg	Glu	Ala	Asp	Pro	Arg	Thr	
			180					185					190			
Ala	Trp	Gln	Pro	Val	Arg	Leu	Ser	Gly	Ala	Gln	Ser	Gly	Trp	Ala	His	
	195						200					205				
Thr	Pro	Ala	Leu	Cys	Val	Ser	Pro	His	Ala	Ser	Ala	Arg	Ala	Gly	Pro	
	210					215					220					
Leu	Pro	Asn	Val	Pro	Pro	Thr	Gln	Ile	Arg	Lys	Ser	Lys	Gly	Asn	Lys	
225					230					235					240	
Ser	Ser	His	Asn	Arg	Val	Lys	Asn	Leu	Lys	Tyr	Gln	Trp	Glu	Ala	Gly	
			245						250					255		
Asn	Ser	Trp	Gly	Lys	Val	Ser	Leu	Phe	Trp	Gly	Trp	Ala	Arg	His	Arg	
			260					265					270			
Ser	Leu	Cys	Phe	Leu	Val	Val	Ala	Cys	Leu	Lys	Val	Lys	Thr	Cys	Leu	
	275						280					285				
Val	Cys	Arg	Phe	Arg	Ile	Ser	Leu	Glu	Lys	His	Gln	Gln	Phe	Ser	Phe	
	290					295					300					
Phe	Tyr	Cys	Tyr	Arg	Ile	Ala										
305					310											

<210> 32
 <211> 1732
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (134) .. (838)

<400> 32
 ggcacgagggc agtgcgaggg cgtgagcggt cgggccccga cgcgcgcggg tctcgtttgg 60
 agcgggagtg agttcctgag cgagtggacc cggcagcggg cgataggggg gccaggtgcc 120
 tccacagtca gcc atg gca gcg ctg cgc tac gcg ggg ctg gac gac acg 169
 Met Ala Ala Leu Arg Tyr Ala Gly Leu Asp Asp Thr
 1 5 10
 gac agt gag gac gag ctg cct ccg ggc tgg gag gag aga acc acc aag 217
 Asp Ser Glu Asp Glu Leu Pro Pro Gly Trp Glu Glu Arg Thr Thr Lys
 15 20 25

gac ggc tgg gtt tac tac gcc aat cac acc gag gag aag act cag tgg	265
Asp Gly Trp Val Tyr Tyr Ala Asn His Thr Glu Glu Lys Thr Gln Trp	
30 35 40	
gaa cat cca aaa act gga aaa aga aaa cga gtg gca gga gat ttg cca	313
Glu His Pro Lys Thr Gly Lys Arg Lys Arg Val Ala Gly Asp Leu Pro	
45 50 55 60	
tac gga tgg gaa caa gaa act gat gag aac gga caa gtg ttt ttt gtt	361
Tyr Gly Trp Glu Gln Glu Thr Asp Glu Asn Gly Gln Val Phe Phe Val	
65 70 75	
gac cat ata aat aaa aga acc acc tac ttg gac cca aga ctg gcg ttt	409
Asp His Ile Asn Lys Arg Thr Thr Tyr Leu Asp Pro Arg Leu Ala Phe	
80 85 90	
act gtg gat gat aat ccg acc aag cca acc acc cgg caa aga tac gac	457
Thr Val Asp Asp Asn Pro Thr Lys Pro Thr Thr Arg Gln Arg Tyr Asp	
95 100 105	
ggc agc acc act gcc atg gaa att ctc cag ggc cgg gat ttc act ggc	505
Gly Ser Thr Thr Ala Met Glu Ile Leu Gln Gly Arg Asp Phe Thr Gly	
110 115 120	
aaa gtg gtt gtg gtc act gga gct aat tca gga ata ggg ttc gaa acc	553
Lys Val Val Val Val Thr Gly Ala Asn Ser Gly Ile Gly Phe Glu Thr	
125 130 135 140	
gcc aag tct ttt gcc ctc cat ggt gca cat gtg atc ttg gcc tgc agg	601
Ala Lys Ser Phe Ala Leu His Gly Ala His Val Ile Leu Ala Cys Arg	
145 150 155	
aac atg gca agg gcg agt gaa gca gtg tca cgc att tta gaa gaa tgg	649
Asn Met Ala Arg Ala Ser Glu Ala Val Ser Arg Ile Leu Glu Glu Trp	
160 165 170	
caa cag gga gct gcc acc acc gtg tac tgt gct gct gtc cca gaa ctg	697
Gln Gln Gly Ala Ala Thr Thr Val Tyr Cys Ala Ala Val Pro Glu Leu	
175 180 185	
gag ggt ctg gga ggg atg tac ttc aac aac tgc tgc cgc tgc atg ccc	745
Glu Gly Leu Gly Gly Met Tyr Phe Asn Asn Cys Cys Arg Cys Met Pro	
190 195 200	
tca cca gaa gct cag agc gaa gag acg gcc cgg acc ctg tgg gcg ctc	793
Ser Pro Glu Ala Gln Ser Glu Glu Thr Ala Arg Thr Leu Trp Ala Leu	
205 210 215 220	
agc gag agg ctg atc caa gaa cgg ctt ggc agc cag tcc ggc taa	838
Ser Glu Arg Leu Ile Gln Glu Arg Leu Gly Ser Gln Ser Gly	
225 230 235	
gtggagctca gagcggatgg gcacacacac ccgccctgtg tgtgtcccct cacgcaagtg	898
ccagggctgg gcccttcca aatgtccctc caacacagat ccgcaagagt aaaggaaata	958
agagcagtca caacagagtg aaaaatctta agtaccaatg ggaagcaggg aattcctggg	1018

gtaaagtatc actttttctgg ggctgggcta ggcataggtc tctttgcttt ctggtggtgg 1078
 cctgtttgaa agtaaaaaacc tgcttggtgt gtaggttccg tatctccctg gagaagcacc 1138
 agcaattctc tttcttttac tggtatagaa tagcctgagg tcccctcgtc ccatccagct 1198
 accaccacgg ccaccactgc agccgggggc tggccttctc ctacttaggg aagaaaaagc 1258
 aagtgttcac tgctccttgc tgcattgatc caggagataa ttgtttcatt catcctgacc 1318
 aagactgagc cagcttagca actgctgggg agacaaatct .cagaaccttg tcccagccag 1378
 tgaggatgac agtgacaccc agagggagta gaatacgcag aactaccagg tggcaaagta 1438
 cttgtcatag actcctttgc taatgctatg caaaaaattc tttagagatt ataacaaatt 1498
 tttcaaataca ttccttagat accttgaaaag gcaggaaggg aagcgtatat acttaagaat 1558
 acacaggata ttttgggggg cagagaataa aacgttagtt aatccctttg tctgtcaatc 1618
 acagtctcag ttctcttgct ttcacattgt acttaaacct cctgctgtgc ctgcgcatcct 1678
 atgcttaata aaagaacatg cttgaatatc aaaaaaaaaa aaaaaaaaaa aaaa 1732

<210> 33

<211> 234

<212> PRT

<213> Homo sapiens

<400> 33

Met	Ala	Ala	Leu	Arg	Tyr	Ala	Gly	Leu	Asp	Asp	Thr	Asp	Ser	Glu	Asp
1				5					10					15	
Glu	Leu	Pro	Pro	Gly	Trp	Glu	Glu	Arg	Thr	Thr	Lys	Asp	Gly	Trp	Val
			20					25					30		
Tyr	Tyr	Ala	Asn	His	Thr	Glu	Glu	Lys	Thr	Gln	Trp	Glu	His	Pro	Lys
		35						40				45			
Thr	Gly	Lys	Arg	Lys	Arg	Val	Ala	Gly	Asp	Leu	Pro	Tyr	Gly	Trp	Glu
	50					55				60					
Gln	Glu	Thr	Asp	Glu	Asn	Gly	Gln	Val	Phe	Phe	Val	Asp	His	Ile	Asn
65				70					75					80	
Lys	Arg	Thr	Thr	Tyr	Leu	Asp	Pro	Arg	Leu	Ala	Phe	Thr	Val	Asp	Asp
			85					90						95	
Asn	Pro	Thr	Lys	Pro	Thr	Thr	Arg	Gln	Arg	Tyr	Asp	Gly	Ser	Thr	Thr
			100					105					110		
Ala	Met	Glu	Ile	Leu	Gln	Gly	Arg	Asp	Phe	Thr	Gly	Lys	Val	Val	Val
	115					120					125				
Val	Thr	Gly	Ala	Asn	Ser	Gly	Ile	Gly	Phe	Glu	Thr	Ala	Lys	Ser	Phe
	130					135					140				
Ala	Leu	His	Gly	Ala	His	Val	Ile	Leu	Ala	Cys	Arg	Asn	Met	Ala	Arg
145				150					155					160	
Ala	Ser	Glu	Ala	Val	Ser	Arg	Ile	Leu	Glu	Glu	Trp	Gln	Gln	Gly	Ala
			165					170						175	
Ala	Thr	Thr	Val	Tyr	Cys	Ala	Ala	Val	Pro	Glu	Leu	Glu	Gly	Leu	Gly
			180					185					190		
Gly	Met	Tyr	Phe	Asn	Asn	Cys	Cys	Arg	Cys	Met	Pro	Ser	Pro	Glu	Ala

	195		200		205											
Gln	Ser	Glu	Glu	Thr	Ala	Arg	Thr	Leu	Trp	Ala	Leu	Ser	Glu	Arg	Leu	
	210						215						220			
Ile	Gln	Glu	Arg	Leu	Gly	Ser	Gln	Ser	Gly							
225							230									

<210> 34
 <211> 19
 <212> DNA
 <213> Homo sapiens

<400> 34
 agcaggcgtg agcggtcgg 19

<210> 35
 <211> 23
 <212> DNA
 <213> Homo sapiens

<400> 35
 actggatttc agcttcgtgg tcg 23

<210> 36
 <211> 20
 <212> DNA
 <213> Homo sapiens

<400> 36
 tccgtgggct gtgcagggtc 20

<210> 37
 <211> 28
 <212> DNA
 <213> Homo sapiens

<400> 37
 ttccccctac ttccttctta tatctggc 28

<210> 38
 <211> 27
 <212> DNA
 <213> Homo sapiens

<400> 38
 atcctcactc caccctatga tctcatc 27

<210> 39
 <211> 24
 <212> DNA
 <213> Homo sapiens

<400> 39 atgggtcttta cttctccctg gcac	24
<210> 40 <211> 29 <212> DNA <213> Homo sapiens	
<400> 40 acttctgcta agattacaga tacacactg	29
<210> 41 <211> 26 <212> DNA <213> Homo sapiens	
<400> 41 agttctttca ggtttaagga ataagc	26
<210> 42 <211> 28 <212> DNA <213> Homo sapiens	
<400> 42 tagatctaag tggatctcat tatagcag	28
<210> 43 <211> 25 <212> DNA <213> Homo sapiens	
<400> 43 acttggggta atttaagtgg tgctc	25
<210> 44 <211> 27 <212> DNA <213> Homo sapiens	
<400> 44 aactttacac actccactga aatctcc	27
<210> 45 <211> 21 <212> DNA <213> Homo sapiens	
<400> 45 attaaacagg ggaattccga c	21

<210> 46
<211> 21
<212> DNA
<213> Homo sapiens

<400> 46
tctcccaatt gtgttcatct g 21

<210> 47
<211> 19
<212> DNA
<213> Homo sapiens

<400> 47
acatccatgg atcccgaag 19

<210> 48
<211> 23
<212> DNA
<213> Homo sapiens

<400> 48
tggtatgaga aaggggataa gtg 23

<210> 49
<211> 25
<212> DNA
<213> Homo sapiens

<400> 49
tgcacccagc attccttaga tttcc 25

<210> 50
<211> 20
<212> DNA
<213> Homo sapiens

<400> 50
accagactca tgcccgaag 20

<210> 51
<211> 23
<212> DNA
<213> Homo sapiens

<400> 51
aaatgacgcc atctcatcac tcc 23

<210> 52

<211> 24
<212> DNA
<213> Homo sapiens

<400> 52
tgttttcctg gcatctacga gaag

24

<210> 53
<211> 17
<212> DNA
<213> Homo sapiens

<400> 53
tttttaacag tcacacc

17

<210> 54
<211> 17
<212> DNA
<213> Homo sapiens

<400> 54
tgtgtttcag atttgcc

17

<210> 55
<211> 17
<212> DNA
<213> Homo sapiens

<400> 55
ttttgggcag ccatata

17

<210> 56
<211> 17
<212> DNA
<213> Homo sapiens

<400> 56
taaaccatag gggtcga

17

<210> 57
<211> 17
<212> DNA
<213> Homo sapiens

<400> 57
ctcattgcag cataaag

17

<210> 58
<211> 17
<212> DNA
<213> Homo sapiens

<400> 58
tttttttcagg cctcttc

17

<210> 59
<211> 17
<212> DNA
<213> Homo sapiens

<400> 59
tattttttaag atttaca

17

<210> 60
<211> 17
<212> DNA
<213> Homo sapiens

<400> 60
ggatttccag caacagg

17

<210> 61
<211> 17
<212> DNA
<213> Homo sapiens

<400> 61
acgccaagta agggggc

17

<210> 62
<211> 17
<212> DNA
<213> Homo sapiens

<400> 62
gcaggagggtt tgtatgt

17

<210> 63
<211> 17
<212> DNA
<213> Homo sapiens

<400> 63
ttggttgagta agtgtct

17

<210> 64
<211> 17
<212> DNA
<213> Homo sapiens

<400> 64
ggaataggta ggctctt

17

<210> 65
<211> 17
<212> DNA
<213> Homo sapiens

<400> 65
agaatgggta agcgctt 17

<210> 66
<211> 17
<212> DNA
<213> Homo sapiens

<400> 66
gaatgtgtga gtgttcc 17

<210> 67
<211> 17
<212> DNA
<213> Homo sapiens

<400> 67
cccatcggtg ggtttga 17

<210> 68
<211> 17
<212> DNA
<213> Homo sapiens

<400> 68
gtccatggta agagaac 17